

FP058-30 Biology Principles and Practice

22/23

Department

Warwick Foundation Studies

Level

Foundation

Module leader

Rachel Evans

Credit value

30

Module duration

25 weeks

Assessment

50% coursework, 50% exam

Study location

University of Warwick main campus, Coventry

Description

Introductory description

This module will develop students' understanding of biological principles and processes. It will provide students with training in biological research and experimental techniques. It will also allow students to explore how biology can be used as part of an interdisciplinary approach to solving problems.

[Module web page](#)

Module aims

This module aims to develop students' understanding of biological principles and processes to allow their successful use and application, particularly to current issues and problems in the Life Sciences. Students will develop skills and experience in evaluating evidence, data analysis, and acquire awareness of ethical issues and debates in biology. This module will enhance students' academic research and writing skills so that they are able to compose written materials that communicate biological topics. Students will be provided with opportunities to apply and strengthen theoretical knowledge gained in complementary and co-requisite modules, to allow them to develop an interdisciplinary outlook.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

1. Cell Biology

- Structure of prokaryotic and eukaryotic cells
- Cell membranes and transport processes
- Stem cells – types and uses in medicine
- The DNA molecule - structure, function and replication
- Role and mechanism of enzymes in biological reactions

1. Human Biology and Health

- Hormonal system – endocrine glands and regulation, e.g. homeostasis of blood glucose
- Nervous system – neural signal transmission
- Respiratory system - including role of diffusion in alveoli and disease case studies such as asthma and cystic fibrosis
- Circulatory system - heart structure, function and coordination, cardiovascular disease
- Digestive system - adaptations for digestion and the role of enzymes
- Immune system - specific and non-specific defence mechanisms
- Infectious disease - epidemics and pandemics, disease prevention, case studies such as Ebola and Covid-19

1. Genetics

- The cell cycle
- Inheritance mechanisms
- Genetic disorders
- Genetic technologies

1. Fundamentals of Biology

- Introduction to laboratory skills and techniques
- Ethical issues in biology
- Utilising and interpreting data in the biological sciences
- Written communication of biological ideas and concepts

Learning outcomes

By the end of the module, students should be able to:

- Apply knowledge of biological principles and processes to understand different biological systems, and the connections between them
- Analyse biological data, research and statistical results, including from experiments, to compose scientific reports and provide evidence-based conclusions
- Use biological principles to develop an interdisciplinary problem-solving approach.

- Prepare different genres of written communication to relate knowledge and research of biological topics.

Indicative reading list

Alberts, B et al (2013). Essential Cell Biology.

Bonner, P and Hargreaves (2011). Basic Bioscience Laboratory Techniques.

Boyle, M and Senior, K (2008). Human Biology.

Campbell, N.A. and Reece, J.B. (2002) Biology: Concepts and Connections (Third Edition).

Clegg, C, J (2014). Biology (Second Edition).

Jones, A., Reed, R and Weyers, J (2016). Practical skills in Biology.

Waugh, A. and Grant, A (2018). Ross & Wilson Anatomy and Physiology in Health and Illness.

[View reading list on Talis Aspire](#)

Research element

The lab report assessment includes an element of research as students can choose what to investigate in the experiment, can select their own variables and research this particular aspect of the topic.

Interdisciplinary

This module links with the Chemistry for the Biosciences module as students will develop knowledge and skills that can be used across both modules in order to develop a broader awareness of the Life Sciences discipline. They will also develop research and experimental skills that can be used in their independent research project in the Inquiry and Research Skills module. Students on the Psychology pathway will be able to explore an introductory neuroscience approach to the study of the brain and behaviour.

International

This module will use international case studies throughout to examine medicine and health issues from across the world. Assessments will be designed to give students choice to research issues that related to their interests and experience.

Subject specific skills

This module will develop student's skills in data analysis, research, use of scientific publications, biological experimental techniques, ethical awareness, and writing reports and essays.

Transferable skills

Students will develop their skills in academic research, critical thinking, team working, referencing and problem solving.

Study

Study time

Type	Required
Seminars	75 sessions of 1 hour (37%)
Supervised practical classes	25 sessions of 1 hour (12%)
Private study	105 hours (51%)
Total	205 hours

Private study description

Students should undertake activities such as reading, practice questions, group work and revision for topic tests.

Costs

No further costs have been identified for this module.

Assessment

You must pass all assessment components to pass the module.

Assessment group C2

	Weighting	Study time
Essay Scientific essay on a biological topic.	20%	20 hours
Scientific report A scientific report based on an experiment students have designed to help solve a problem in the biological sciences. Report to include introduction, method, results, discussion and conclusion sections, and to include an analysis of their own data.	30%	30 hours
In-person Examination Summer exam featuring short-answer questions and longer, report-style questions.	50%	45 hours

- Answers provided on Question Paper. No Answerbook required
- Students may use a calculator

Feedback on assessment

Students will receive individual written feedback as well as verbal feedback in seminars.

[Past exam papers for FP058](#)

Availability

Courses

This module is Core for:

- FIOE Warwick International Foundation Programme
 - Year 1 of FP21 Warwick International Foundation Programme - Life Sciences
 - Year 1 of FP22 Warwick International Foundation Programme - Psychology